

The Labrid Fish Genus *Pseudojuloides*, with Description of a New Species

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ABSTRACT

Pseudojuloides elongatus n.sp. is described from specimens collected in New Zealand, Norfolk Island, New South Wales and Western Australia, and Japan. The genus *Pseudojuloides* Fowler and the type and only other species in the genus, *P. cerasinus* (Snyder), are redescribed.

INTRODUCTION

The genus *Pseudojuloides* was created by Fowler (1949) to separate *Pseudojulis cerasina* Snyder (1904) from other species of the genus *Pseudojulis* Bleeker (1862). Fowler differentiated *Pseudojuloides* by its much larger thoracic scales, shorter pectoral fins, greater number of scale rows on the caudal fin base, and differences in colouration. These characters alone seem insufficient to warrant separate generic status and probably for this reason there has been some confusion as to the validity of the genus, Randall (1973) for example, has referred *Pseudojuloides cerasinus* to the genus *LeptoJulis*.

The discovery of a new species of *Pseudojuloides* in northern New Zealand waters led us to closely re-examine the status of the genus. Comparing our specimens and those of *P. cerasinus* with Fowler's description revealed several major discrepancies in the original description of *Pseudojuloides*. These necessitate a review of the genus.

In this paper we redescribe *Pseudojuloides* and the type species *P. cerasinus*. The new species of *Pseudojuloides* collected from northern New Zealand and subsequently found also in eastern and western Australia, at Norfolk Island, and in southern Japan, is described.

METHODS

Measurements were made with vernier calipers to the nearest half millimeter. Standard length is abbreviated as SL. In the description, counts and proportions follow Randall (1972). For the new species, those for the holotype are given

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first while those for the paratypes, when different from the holotype, appear in parentheses.

Type material has been deposited in the following institutions: Australian Museum, Sydney (AMS); Bernice P. Bishop Museum, Honolulu (BPBM); National Museum of New Zealand, Wellington (NMNZ); Tanaka Memorial Biological Station, Tokyo (TMBS); Western Australian Museum, Perth (WAM).

DESCRIPTIONS

Pseudojuloides Fowler

Pseudojuloides Fowler, 1949: p. 119 (type species: *Pseudojulis cerasina* Snyder, by original designation).

DESCRIPTION:

Dorsal rays IX, 11-12; anal rays III, 12; pectoral rays i, 10-11; pelvic rays I,5; principal caudal rays 14. Lateral line continuous, abruptly bent downward beneath soft portion of dorsal fin, 27 scales in lateral line, an additional enlarged scale beyond caudal base. Lateral line pores simple, unbranched. Scale rows above lateral line beneath origin of dorsal fin $2\frac{1}{2}$, below lateral line to origin of anal fin $7\frac{1}{2}$. Gill rakers small, 13-16 on first arch. Branchiostegal rays 6. Vertebrae 10+15.

Body elongate, moderately compressed, snout pointed. Interorbital convex, low; eye small. Mouth terminal, lips moderately broad and well developed; lower lip with prominent downward projecting flap on each side, inner surface of upper lip plicate. Single pair of well-developed, forwardly projecting canines in front of jaws, upper pair splayed apart, those of lower jaw fitting between them; teeth on sides of jaws small and laterally compressed, restricted to anterior part of jaw. Larger individuals with a posterior canine in the angle of jaw on each side. Lower pharyngeal plate broadly Y-shaped, posterior row of teeth laterally compressed and elongate, those in centre somewhat enlarged and asymmetrically conical, remainder molariform with 4-5 small conical teeth extending in single row onto anterior shank of bone. Upper pharyngeals with teeth in triangular patch, anterior row of which are asymmetrically conical, remainder molariform (Figs. 1-6).

Preoperculum entire with free lower edge, about 1.5 times longer than posterior free edge; gill membranes broadly attached to isthmus with very narrow free fold posteriorly. Nostrils small, anterior nostril in short tube, posterior nostril with small dermal flap on anterior margin.

Head naked except for patch of small scales on nape or on side of head above operculum. Thoracic scales smaller than those on rest of body. No scales on fins except for caudal which has about 4 rows of small scales on base.

Caudal fin rounded. Dorsal fin long, its origin slightly forward of vertical through upper pectoral base. Anal fin elongate, its origin below last dorsal spine.

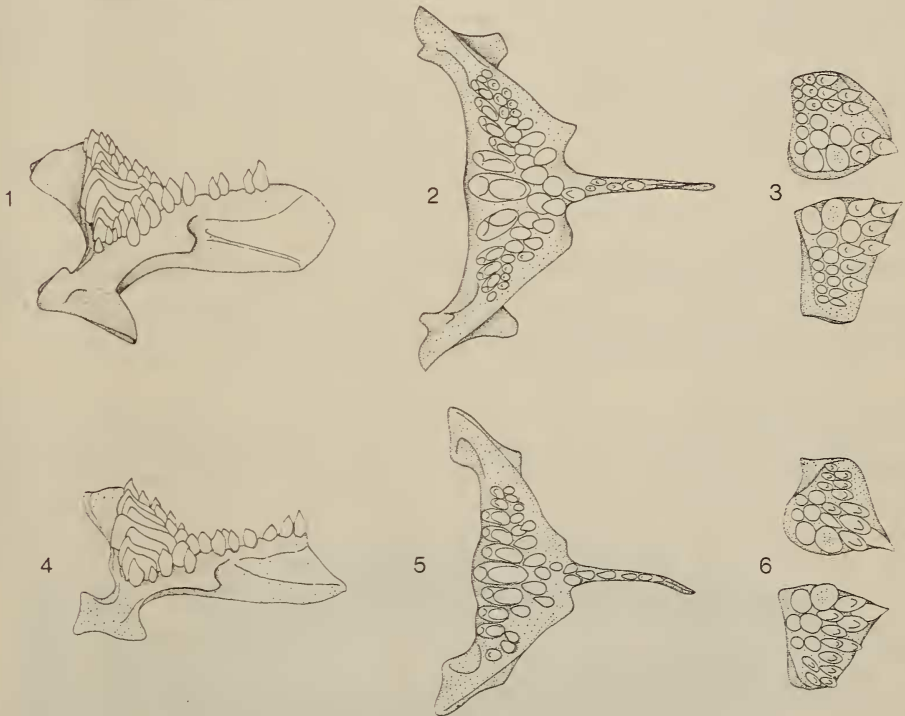
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Pectoral fins rounded, first soft ray longest. Pelvic fins pointed, first two rays longest.

Sexually dimorphic; males brightly coloured, females drab.

REMARKS:

Fowler (1949) appears to have erred in his original description of *Pseudojuloides*. His description of colouration as "little contrasted, largely uniform" applies only to female specimens. A more important discrepancy is in his description of the teeth as "uniserial, largest in front of jaws, gradually smaller to last or posterior, all simple, pointed, conical." In all the specimens we have examined, the teeth in the sides of the jaw are laterally compressed. John R. Paxton, who has examined the type of *P. cerasinus* for us in the U.S. National Museum, reports that the teeth in that specimen also are small and laterally compressed.



Figs. 1-6. Pharyngeal bones of two species of *Pseudojuloides*.

1-3 *P. cerasinus* 63 mm SL. Fig. 1. Oblique lateral view of lower pharyngeal bone. Fig. 2. Dorsal view of lower pharyngeal bone. Fig. 3. Ventral view of upper pharyngeal bones.

4-6 *P. elongatus* 54 mm SL, same sequence as above.

The relationships of *Pseudojuloides* to the related genera *Pseudojulis*, *Leptojulis* and *Halichoeres* are not clear. All are characterised by small thoracic scales, naked head, absence of scales on dorsal and anal bases and 9 pungent dorsal spines. The type of *Pseudojulis* (*P. girardi* Bleeker) appears to be a juvenile *Halichoeres* and the status of this genus is doubtful. Separation of the other genera has been mainly on the basis of differences in jaw dentition. *Leptojulis* (type *L. cyanopleura* Bleeker) differs from both *Pseudojuloides* and *Halichoeres* in possessing two pairs of large canine teeth at the front of the jaws, although in small specimens of *L. cyanopleura* (less than 45 mm SL) the second pair are not well developed. In *Halichoeres* (type *H. bimaculatus* Rüppell) the jaw teeth are small and conical and clearly distinct from those of *Pseudojuloides*. The presence of more laterally compressed jaw teeth in *H. biocellatus* Schultz, although less widely separated than in *Pseudojuloides*, however, suggests that the structure of the jaw teeth in *Halichoeres* may be somewhat variable. Similarly, the presence of a posterior canine in the angle of the jaw, used as a diagnostic character by some authors, appears to be variable among species of *Halichoeres* which we have examined. The posterior canine in *Pseudojuloides elongatus* is developed only in specimens greater than about 100 mm SL. For the present we regard *Pseudojuloides* as a valid genus distinct from *Halichoeres* by its more elongate body and compressed, widely separate jaw teeth.

Pseudojuloides cerasinus (Snyder)

Figs. 1-3, 7

Pseudojulis cerasina Snyder, 1904: p.528 (type locality, Honolulu, Hawaii).

Pseudojuloides cerasinus — Fowler, 1949: p.119 (Hawaiian Is.).

Leptojulis cerasinus — Randall, 1973: p.197 (Society Is.).

MATERIAL EXAMINED:

AMS I.17470-004, (1) 73 mm SL., Uvea Atoll (20°23'S, 166°40'E), Loyalty Islands, 10-25 m, speared by G. R. Allen and W. A. Starck 18 June, 1973. AMS I.18094-002, (1) 78.5 mm SL., One Tree Island (23°30'S, 152°05'E), Great Barrier Reef, 20 m, speared by A. M. Ayling and B. C. Russell 16 September, 1974. AMS I.18366-001, (2) 60-71 mm SL., off Lahelahe Point (21°27.5'N, 158°13'E), Oahu, Hawaii, 28 m, speared by J. E. Randall 13 July, 1968.

DIAGNOSIS:

A species of *Pseudojuloides* with the following combination of characters: Dorsal rays IX,11; pectoral rays i, 11; lateral jaw teeth 6-7; triangular patch of small predorsal scales on nape; male dark green with deep blue midlateral line, below which is light green line, belly blue; lower part of head and cheeks blue with distinctive blue band passing from back of eye across operculum down to pectoral base, distinctive blue band on caudal fin separating dark outer half; female uniform reddish-brown.

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DESCRIPTION:

Dorsal rays IX, 11; anal rays III, 12; pectoral rays i, 11; pelvic rays I, 5; principal caudal rays 14; gill rakers on first arch small, 7+6.

Body elongate, depth in front of anal fin 4.1-4.2 in SL, width 1.9-2.1 in depth; head pointed, length 2.9-3.2 in SL; snout including lips 3.1-3.2 in head; eye diameter 1.4-1.9 in snout; interorbital space convex, bony width 4.9-5.4 in head; least depth of caudal peduncle 2.7-3.1 in head; length of caudal peduncle 1.0-1.1 in least depth of peduncle.

Upper jaw nearly reaching a point vertically below anterior nostril; single pair of pointed, well-developed, forward projecting canines at front of jaws; 6-7 small and laterally flattened teeth, well-spaced, in anterior part of jaws along each side. Pharyngeal teeth (Fig. 1): upper bones with 20-22 teeth forming triangular patch, anterior row in each patch asymmetrically conical, remainder molariform; lower bone broadly Y-shaped, row of 10-11 laterally compressed elongated teeth, centre three teeth somewhat enlarged and asymmetrically conical, remainder molariform; 4-5 conical teeth extend uniserially on to anterior shank of the bone.

Caudal fin length 1.5-1.8 in head length; first dorsal spine 1.7-2.1 in snout length; second dorsal spine about one and a quarter times as long as first; ninth dorsal spine about one and a half times as long as first; length of longest dorsal ray 3.2-3.3 in head length; first anal spine 2.3-2.7 in first dorsal spine; third anal spine about three times as long as first; longest anal ray about equal to longest dorsal ray. Pectoral fins 1.8-2.1 in head length; origin of pelvic fins below lower base of pectoral fins; pelvic fins 2.1-2.7 in head length, first pelvic ray longest, reaching almost to vent.

Head naked except for a triangular patch of small predorsal scales on nape.

COLOUR: (from colour transparencies)

Male — body colour dark green, a deep blue row of scales midlaterally, below which is a row of light green or yellowish scales. Scattered indistinct

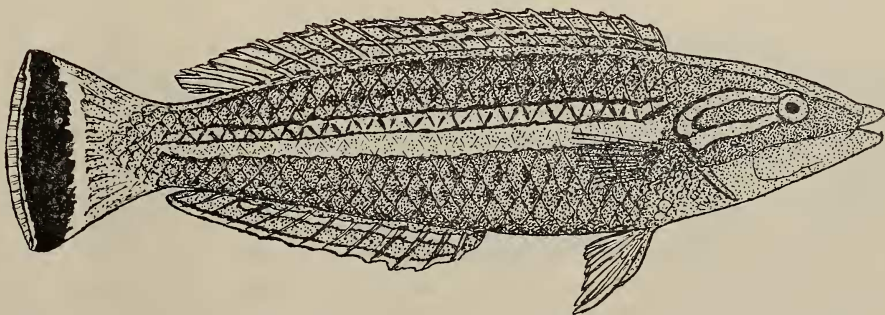


Fig. 7. *Pseudojuloides cerasinus* ♂ 75 mm SL.

blue spots on belly giving an overall blue diffusion. Head dark green above, a diffuse broad blue band passing from upper lip to just behind eye. A narrower dark blue band beginning behind eye, crossing preopercule, bending downwards across operculum and ending just above pectoral base. Lower part of head and cheeks blue. Iris green with a blue rim. Dorsal and anal fins dark green with blue margin, a second narrower blue line medially along fin. Caudal dark green at base, a narrow deep blue band separating the outer half which is black. Pectorals hyaline; pelvics dark green with blue markings. Colours in preservative are largely faded but in the male the dark blue midlateral line remains as a dusky line, the light green band below it somewhat lighter than the rest of the body. The dark outer margin and band on the caudal fin remain distinct.

Female — uniform reddish brown, fins translucent reddish brown.

DISTRIBUTION:

Hawaii, Loyalty Islands, Great Barrier Reef. John W. Shepard reports that this species also occurs in southern Japan and the Ryuku Islands.

***Pseudojuloides elongatus* n. sp.**

Figs. 4-6, 8-10; Table 1

Leptojulius sp. Masuda *et al*, 1975: p. 304 (Izu Oceanic Park, southern Japan)

HOLOTYPE:

NMNZ 6153, 123 mm SL, Nursery Cove (35°28.5'S, 174°44'E), Poor Knights Islands, New Zealand, 12 m, speared by A. M. Ayling 4 December, 1974.

PARATYPES:

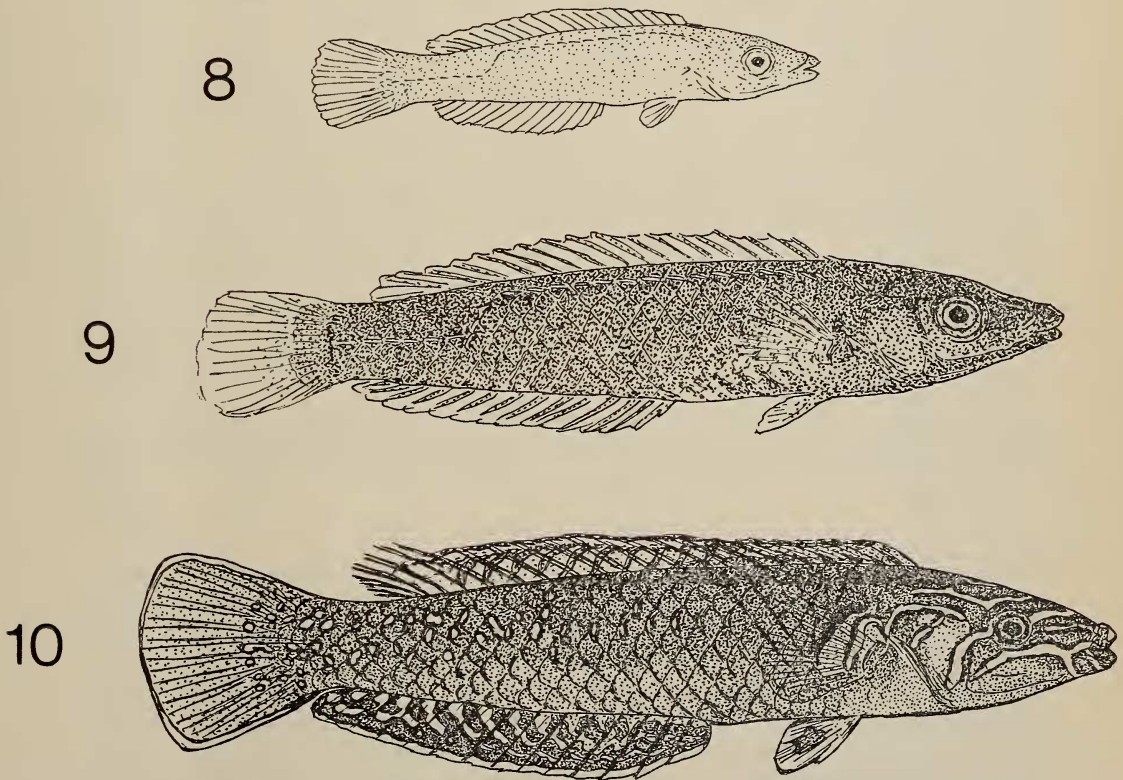
AMS I.17033-036, (1) 49.5 mm SL., North Head (33°49'S, 151°16'E), Sydney Harbour, 7 m, collected with rotenone by G. R. Allen, D. F. Hoese, G. McPherson, J. Paxton, D. Pollard, B. C. Russell, 6 April, 1974. AMS I.17735-008, (1) 58 mm SL., Camp Cove (33°50'S, 151°16'E), Sydney Harbour, 5 m, hand-netted by R. Kuitert 28 April, 1974. AMS I.17743-004, (3) 56.5-60 mm SL., Watsons Bay (33°50'S, 151°16'E), Sydney Harbour, 5 m, hand-netted by R. Kuitert 13-14 April, 1974. AMS I.17767-001, (6) 47.5-67 mm SL., between Watsons Bay and Parsley Bay (33°49.5'S, 151°16'E), Sydney Harbour, 5 m, hand-netted by R. Kuitert 5 May, 1974. AMS I.17800-001, (3) 66.5-75 mm SL., Sugarloaf Point (31°26'S, 152°32'E), Seal Rocks, 8 m, hand-netted by R. Kuitert 13 May, 1974. AMS I.18772-001, (1) 66 mm SL., Phillip Island (29°07'S, 167°56.5'E) Norfolk Island, 15 m, speared by B. C. Russell and A. Piper 20 September, 1975. BPBM 18022, (1) 67 mm SL., Balmoral Beach (33°49'S, 151°15'E), Sydney Harbour, 5 m, hand-netted by R. Kuitert 3 May, 1974. NMNZ 6155, (1) 106 mm SL., Nursery Cove, Poor Knights Islands, New Zealand, 15 m, speared by A. M. Ayling 18 April, 1974. NMNZ 6157, (1) 95 mm SL., Sandager's Reef (35°28.5'S, 174°44'E), Poor Knights Islands, New Zealand, 10 m, speared

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by A. M. Ayling 20 February, 1974. NMNZ 6156, (1) 126.5 mm SL., same data as holotype. NMNZ 6154, (1) 121 mm SL., Sandager's Reef, Poor Knights Islands, New Zealand, 10 m, speared by A. M. Ayling 2 February, 1975. TMBS 750819-1, (1) 115 mm SL., Igaya Bay (34°05'N, 124°10'E), Miyake-jima, Izu Islands, Japan, 14 m, screen netted by K. Meyer and J. T. Moyer. WAM P25110-001, (3) 88-97 mm SL., Kendrew Island (20°28.5'S, 116°32'E), Dampier Archipelago, Western Australia, 10 m, speared by G. R. Allen 2 November, 1974. WAM P25318-007, (1) 106.5 mm SL., Batavia wreck site (28°30'S, 113°44'E), Abrolhos Island, Western Australia, 8-10 m, speared by G. R. Allen 22 May, 1975. WAM P25318-008, (1) 112 mm SL., same data as previous specimen.

DIAGNOSIS:

A species of *Pseudojuloides* with the following combination of characters: dorsal rays IX, 12; pectoral rays i, 10; lateral jaw teeth 3-4 (upper jaw), 4-5 (lower jaw); predorsal scales absent; male olive green, back dusky, head



Figs. 8-10. *Pseudojuloides elongatus*. Fig. 8. Juvenile 28 mm SL. Fig. 9. ♀ 72 mm SL. Fig. 10. ♂ 78 mm SL.

TABLE 1

MORPHOMETRIC PROPORTIONS OF HOLOTYPE AND 5 PARATYPES OF
PSEUDOJULOIDES ELONGATUS

Proportions are as a percentage of the standard length

Registration number	NMNZ 6153	NMNZ 6156	NMNZ 6154	AMS I.17800-001	WAM P25318-007	TMBS 750819-1
Sex	♂	♂	♀	♂	♀	♂
Standard length (mm)	123.0	126.5	121.0	75.0	106.5	115.0
Depth of body	22.8	21.7	23.1	19.3	19.7	21.7
Width of body	12.6	12.3	14.9	10.7	8.5	13.0
Head length	29.3	30.4	29.3	30.0	30.0	29.1
Snout length	11.4	12.3	11.6	11.3	10.3	11.3
Eye diameter	4.3	4.2	5.4	5.0	5.6	5.2
Bony interorbital width	6.1	5.9	6.0	6.0	5.2	6.5
Length of upper jaw	7.1	7.7	6.6	7.7	6.1	5.7
Least depth of caudal peduncle	11.4	10.7	10.7	10.7	10.3	11.3
Length of caudal peduncle	9.4	8.7	9.5	8.7	12.2	11.7
Snout to origin of dorsal fin	28.1	29.3	29.8	28.7	28.6	27.8
Snout to origin of anal fin	52.0	50.6	52.5	48.7	49.8	49.6
Snout to origin of ventral fin	32.5	34.4	31.4	32.0	30.0	30.9
Length of caudal fin	19.9	20.6	19.0	20.0	19.7	20.9
Length of pectoral fin	14.2	14.6	14.9	14.7	15.5	13.0
Length of ventral fin	11.4	11.5	11.2	12.7	12.2	12.1
Length of first dorsal spine	3.7	4.0	3.9	3.3	3.8	4.3
Length of second dorsal spine	4.7	5.9	5.6	5.7	5.2	5.7
Length of last dorsal spine	8.1	6.9	9.1	8.7	8.0	8.7
Length of longest dorsal ray	10.6	10.7	10.7	11.3	10.3	11.7
Length of first anal spine	3.1	2.8	2.5	3.3	2.3	2.6
Length of second anal spine	4.3	4.6	5.2	5.0	4.7	4.3
Length of third anal spine	5.9	6.5	7.4	6.7	5.6	6.5
Length of longest anal ray	10.2	9.9	9.9	10.7	9.9	10.8
Length of dorsal fin base	58.1	58.1	58.7	56.0	59.2	60.4
Length of anal fin base	41.3	41.9	39.7	39.3	39.4	43.9

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brownish with four distinctive blue lines on each side, a dusky patch behind the pectoral fin base; female a uniform olive green.

DESCRIPTION:

Dorsal rays IX, 12; anal rays III, 12; pectoral rays i, 10; pelvic rays I, 5; principal caudal rays 14; gill rakers on first gill arch small, 9 + 7.

Body very elongate, depth in front of anal fin 4.4 (3.2-5.6) in SL, width 1.8 (1.5-2.5) in depth; head pointed, length 3.4 (3-3.4) in SL; snout including lips 2.5 (2.5-3.1) in head; eye diameter 2.7 (1.5-2.9) in snout; interorbital space convex, bony width 4.8 (4.5-5.8) in head; least depth of caudal peduncle 2.6 (2.7-3.3) in head; length of caudal peduncle 0.8 (0.7-1) in least depth of peduncle.

Upper jaw nearly reaching a point vertically below anterior nostril; single pair of pointed, well-developed, forward projecting canines at front of jaws; upper jaw with 3-4 small laterally flattened teeth, well-spaced in anterior part of jaw; lower jaw with 4-5 teeth similarly shaped and arranged. Pharyngeal teeth (Fig. 1): upper bones with 19-20 teeth forming triangular patch, anterior row in each patch asymmetrically conical, remainder molariform; lower bone broadly Y-shaped, posterior row of 9 laterally compressed elongate teeth, centre three somewhat enlarged and asymmetrically conical, remainder molariform; 4-5 small conical teeth extend uniserially onto anterior shank of bone.

Caudal fin length 1.5 (1.4-1.7) in head length; first dorsal spine 3.1 (2.2-4.4) in snout length; second dorsal spine about one and a half times as long as first; ninth dorsal spine about twice as long as first; length of longest dorsal ray 2.8 (2.6-3.4) in head length; first anal spine 1.2 (0.7-2.2) in first dorsal spine; third anal spine about twice as long as first; longest anal ray about equal to the longest dorsal ray. Pectoral fins 2.1 (1.3-2.6) in head length; pelvic fins 2.6 (2.3-3.2) in head length, first pelvic ray longest, reaching about two thirds of way from fin base to vent. See Table 1.

Head naked except for 4-5 diagonal rows of small scales on each side of head in forward projecting V-shaped patch above operculum; no midline predorsal scales.

COLOUR:

Male (from holotype) — Body colour olive green with lines of irregularly shaped turquoise blue spots and scattered irregular orange-brown patches on the dorsal scales; head brown above, orange-brown on the sides and green beneath chin with four blue lines on each side; the upper line originating above the eye and passing back to the upper origin of the opercular flap; the second beginning dorsally on the snout and passing back through the eye before slanting upwards to run around the upper edge of the opercular flap; the third line originating on the upper lip and immediately breaking into two, one part passing down around the lips, the other back through the eye and slanting abruptly downwards towards the isthmus; the fourth arching from the lower lip up past the lower rim of the

eye and down to the preopercular margin; on the operculum between the second and third lines is another short diagonal blue line that combined with the posterior portion of the second line separates a dusky patch on the opercular flap. Iris orange with a blue rim. A dusky patch behind pectoral fin base and an orange, blue bordered patch on the body behind this. Dorsal fin pale olive with red-brown diagonal lines and a narrow blue margin; anal fin red-brown with a prominent blue margin and a series of irregular diagonal blue lines. Caudal pale olive with a faint red rim, a blue line on upper and lower margins and blue spots at the base of the fin rays. Pectoral fins hyaline; pelvics blue with red-brown streaks. Colours in preservative are faded, body colour pale green, the blue lines on the male becoming dusky, but the dark back and dusky patch behind pectoral fin remain prominent.

Female — Uniform olive green with pale brown fins.

REMARKS:

This species may be distinguished from *Pseudojuloides cerasinus* by its extra dorsal soft ray; one fewer pectoral ray; slightly more elongate body; fewer jaw teeth; absence of predorsal scales, head scales being limited to a small patch on either side of the head above operculum; and differences in colour.

Male specimens from Western Australia and from Japan that we have examined are much more darkly pigmented on the back, some almost black compared with those from eastern Australia and New Zealand.

Named *elongatus* in reference to the elongate body form.

DISTRIBUTION:

North-eastern New Zealand, Norfolk Island, New South Wales, Western Australia and southern Japan.

ACKNOWLEDGEMENTS

We wish to thank Rudi H. Kuitert for his drawings of *Pseudojuloides* and Dr. John R. Paxton for his constructive criticism of the manuscript. Dr. Gerald R. Allen, Rudi H. Kuitert and Dr. John W. Shepard provided additional information and specimens of *P. elongatus*. Collecting trips in New Zealand were supported by the New Zealand University Grants Committee.

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